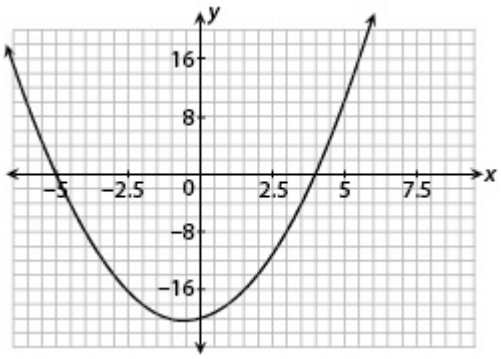
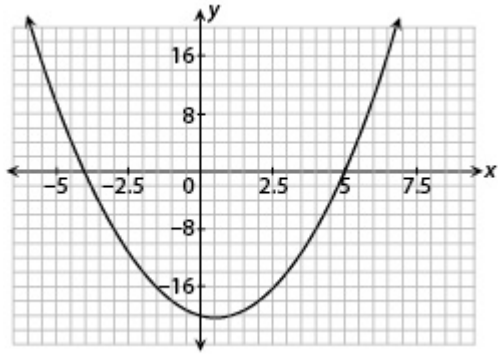
Directions: Answer the following question(s).

1 Which graph shows the zeros of the function $f(x) = x^2 - x - 20$?

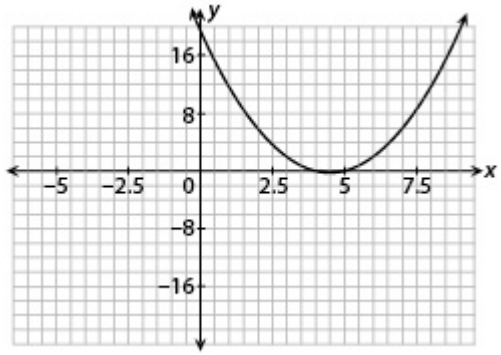
A.



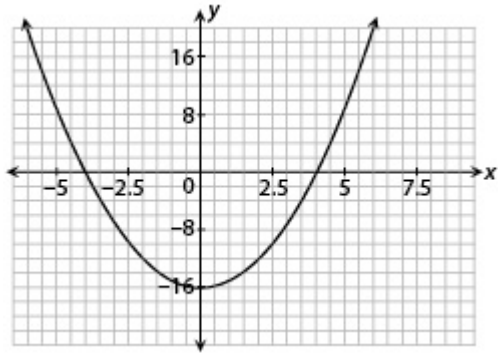
B.



C.



D.



Master ID: 2557943 Revision: 1

Correct: B

Rationale:

A. The function in this graph does not have zeros at $x = –4$ and $x = +5$. The function may have been factored incorrectly or the correct factoring was misinterpreted to have zeros at $x = 4$ and $x = –5$.

B. This function factors as $(x + 4)(x – 5)$, and therefore has zeros, or x-intercepts, at $x = –4$ and $x = +5$.

C. The function in this graph does not have zeros at $x = –4$ and $x = +5$. This may be the result of incorrectly factoring the equation as $(x – 4)(x – 5)$.

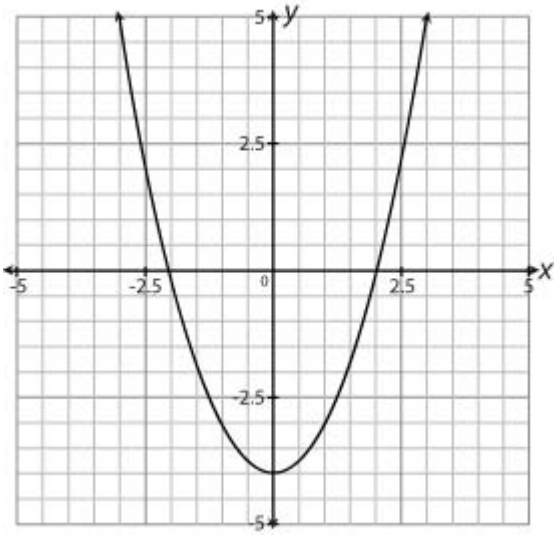
D. The function in this graph does not have zeros at $x = –4$ and $x = +5$. This may be the result of incorrectly factoring the equation as $(x – 4)(x + 4)$.

Standards:

CCSS.Math.Content.HSA-APR.B.3

Directions: Answer the following question(s).

2 The graph of the equation $y = x^2 - 4$ is shown on the coordinate plane below.



What are the factors of this polynomial? Explain how you know.

Master ID: 2191316 Revision: 4
Rubric: 2 Point(s)

2 The response is correct and complete. A sample 2-point response is shown below.

Sample Correct Answer:

The graph shows that the polynomial intercepts the x-axis at –2 and 2. This means that $y = 0$ for all values of x equal to –2 and 2. So $y = 0$ when $(x + 2)$ and $(x – 2)$ equal 0. This means that these are the factors of this polynomial.

1 The response is partially correct.

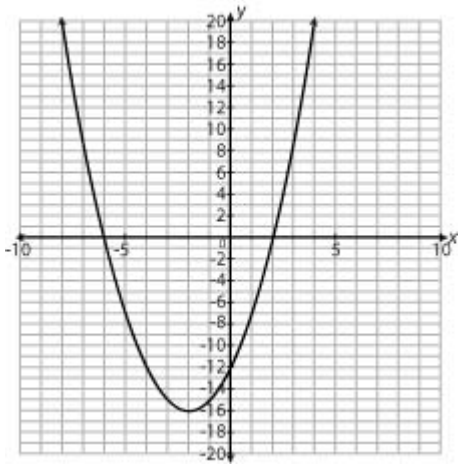
This level may include one correct factor with a complete explanation given, OR the correct zeros listed, but they are not given in factor form and a complete explanation given, OR two correct factors but an incorrect or missing explanation.

0 The response is completely incorrect, there is no response, or the response is off topic.

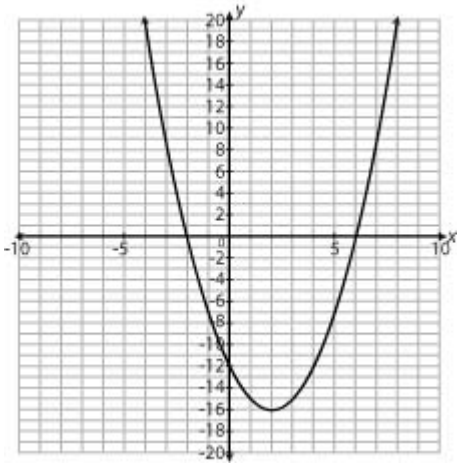
Standards:
CCSS.Math.Content.HSA-APR.B.3

3 Given the function $f(x) = x^2 - 4x - 12$, which of these correctly identify a zero and a sketch of the graph of the function?

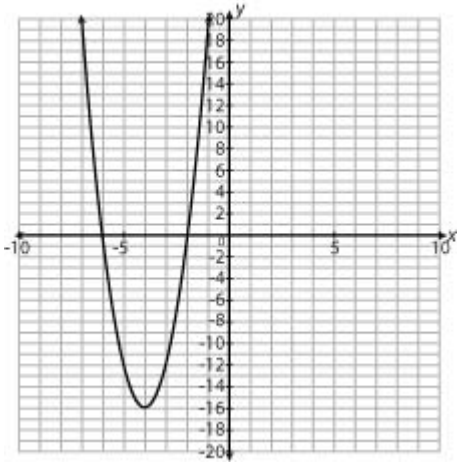
A. $x = 2$,



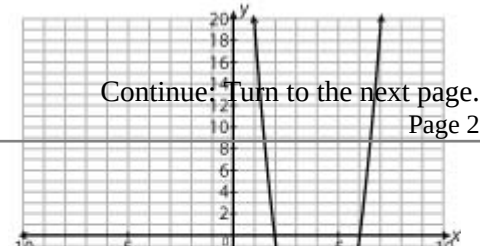
B. $x = -2$,



C. $x = -2$,



D.



Directions: Answer the following question(s).

Master ID: 2539168 Revision: 1
Correct: B
Rationale:

A. The function in this graph does not have zeros at $x = -2$ and $x = 6$. This function may have been factored incorrectly or the correct factoring was misinterpreted to have zeros at $x = 2$ and $x = -6$.

B. This function factors as $(x + 2)(x - 6)$ and therefore has zeros, or x-intercepts, at $x = -2$ and $x = 6$.

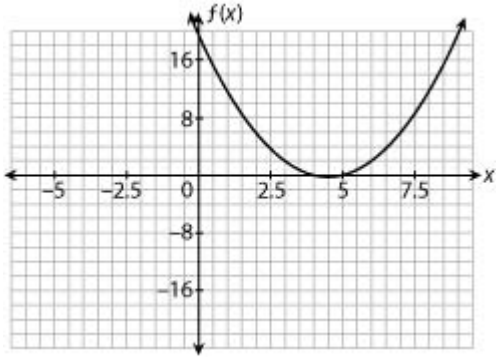
C. The function in this graph does not have zeros at $x = -2$ and $x = 6$. This may be the result of incorrectly factoring the equation as $(x + 2)(x + 6)$.

D. The function in this graph does not have zeros at $x = -2$ and $x = 6$. This may be the result of incorrectly factoring the equation as $(x - 2)(x - 6)$.

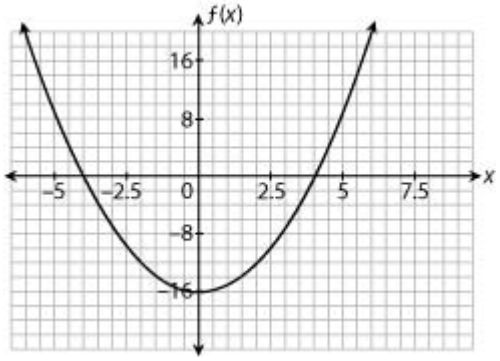
Standards:
CCSS.Math.Content.HSA-APR.B.3

4 The zeros of the function $f(x) = x^2 - x - 20$ can be used to sketch its graph. Which graph below represents this function?

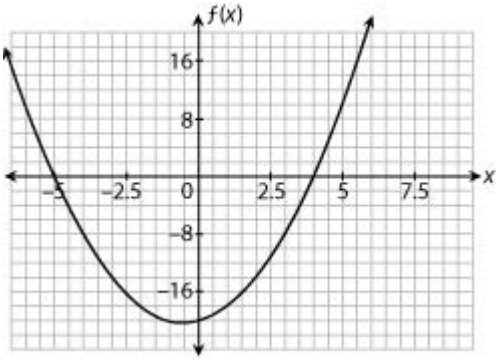
A.



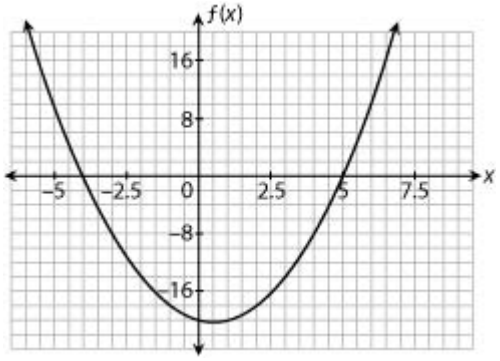
B.



C.



D.



Directions: Answer the following question(s).

Master ID: 308067 Revision: 3
Correct: D
Rationale:

A. The function in this graph does not have zeros at $x = –4$ and $x = +5$. This may be the result of incorrectly factoring the equation as $(x – 4)(x – 5)$.
B. The function in this graph does not have zeros at $x = –4$ and $x = +5$. This may be the result of incorrectly factoring the equation as $(x – 4)(x + 4)$.
C. The function in this graph does not have zeros at $x = –4$ and $x = +5$. The function may have been factored incorrectly or the correct factoring was misinterpreted to have zeros at $x = 4$ and $x = –5$.
D. This function factors as $(x + 4)(x – 5)$, and therefore has zeros, or x-intercepts, at $x = –4$ and $x = +5$.

Standards:
CCSS.Math.Content.HSA-APR.B.3

5 Determine which values are the zeros for each polynomial listed in the table below.

Drag and drop the “X” into the box that correctly identifies the zero(s) for each polynomial listed.

Web Only Interaction

Master ID: 2557946 Revision: 1
Rubric: 1 Point(s)
This item is worth 1 point.

The correct response is shown below.

Polynomial	9	6	3	2	1	0	–1	–2	–3	–6	–9
$x^2 + 5x – 6$					X					X	
$x^2 – 6x + 9$			X								
$x^2 – 81$	X										X
$x^2 – x – 6$			X					X			

Standards:
CCSS.Math.Content.HSA-APR.B.3